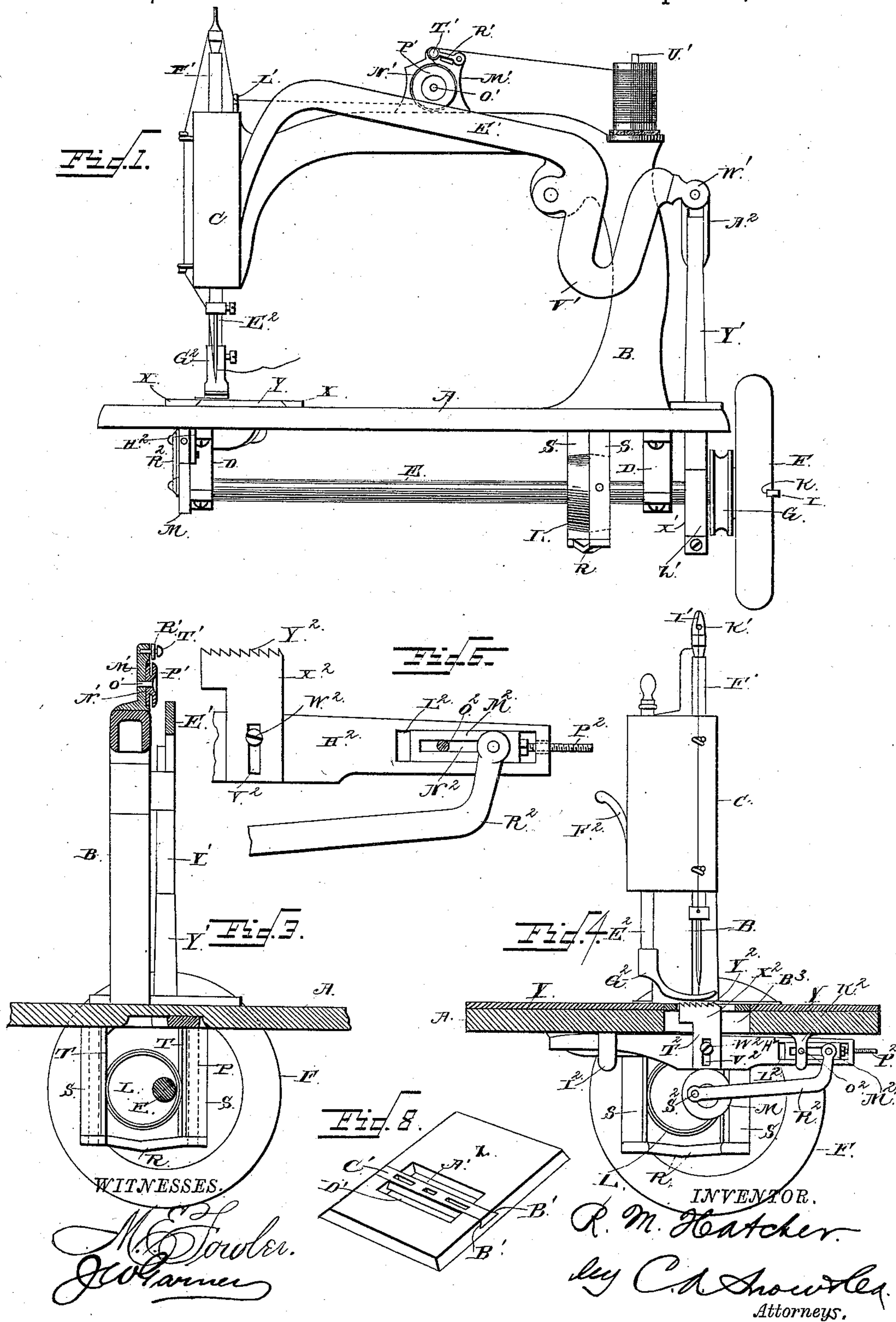


R. M. HATCHER.

FEEDING DEVICE FOR SEWING MACHINES.

No. 381,778.

Patented Apr. 24, 1888.



(No Model.)

2 Sheets—Sheet 2.

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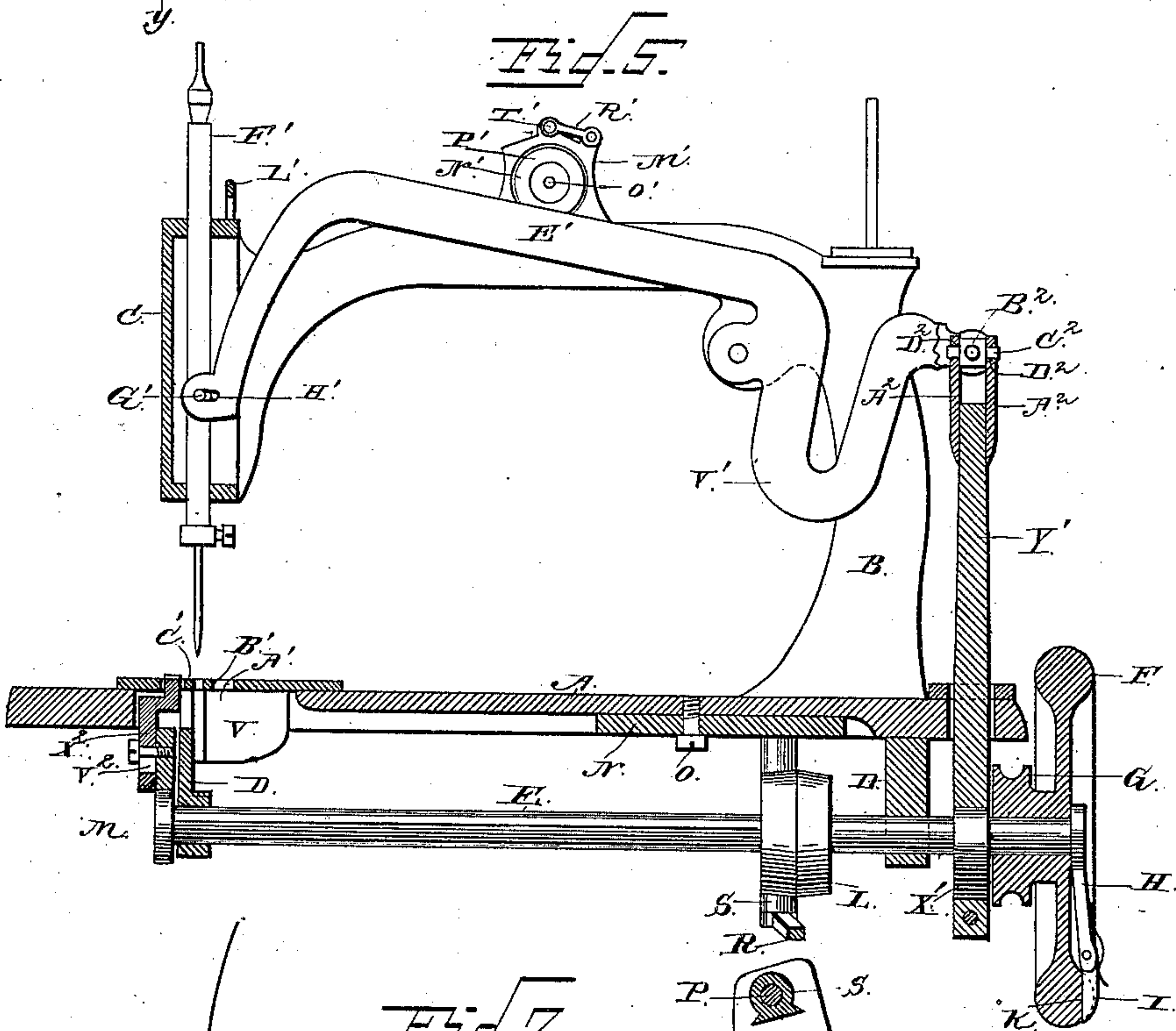
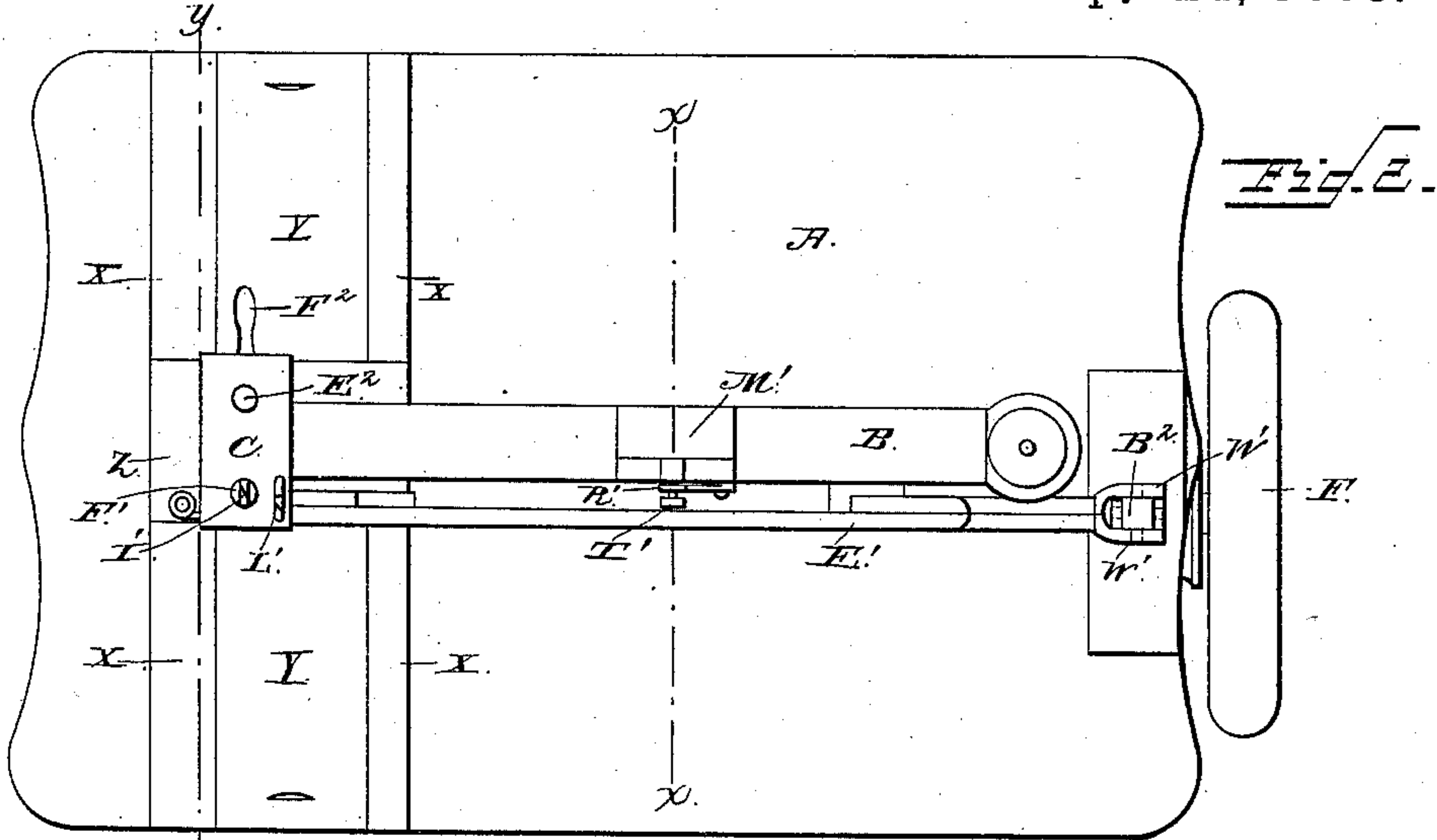


Fig. 7

WITNESSES.
M. C. Fowler
J. W. Garner

INVENTOR.
R. M. Hatcher
by C. A. Snowdlea
Attorneys.

UNITED STATES PATENT OFFICE.

RICHARD MANTON HATCHER, OF ST. BETHLEHEM, TENNESSEE.

FEEDING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 381,778, dated April 24, 1888.

Application filed May 21, 1887. Serial No. 238,997. (No model.)

To all whom it may concern:

Be it known that I, RICHARD MANTON HATCHER, a citizen of the United States, residing at St. Bethlehem, in the county of Montgomery and State of Tennessee, have invented a new and useful Improvement in Sewing-Machines, of which the following is a specification.

My invention relates to an improvement in sewing-machines; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claims.

In the drawings, Figure 1 is an elevation of the operating parts of a sewing-machine embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical transverse sectional view taken on the line $x x$ of Fig. 2. Fig. 4 is an end elevation, partly in vertical section, on the line $y y$ of Fig. 2. Fig. 5 is a vertical longitudinal sectional view taken on the line $z z$ of Fig. 3. Figs. 6, 7, and 8 are detail views of parts of my invention.

A represents the base-plate of a sewing-machine, from which projects the usual arm, B. At the front end of the said arm is a vertical guiding-box, C. From the under side of the base-plate, near the ends thereof, depend bearing-boxes D, in which is journaled a longitudinal shaft, E. Near the outer end of the shaft is loosely mounted a small fly-wheel, F, and secured to the inner side of the said fly-wheel is a pulley, G, having the peripheral grooves adapted to receive the usual endless belt to connect the same to the driving-wheel. (Not shown.)

H represents an arm, which is attached to the projecting end of the shaft E and extends at right angles thereto. In the outer end of the said arm is pivoted a spring-actuated detent, I, which normally engages a radial recess, K, in the outer side of the fly-wheel F, and thereby locks the said fly-wheel to the main shaft E. At a suitable distance from the fly-wheel F a cam, L, is attached to the main shaft. The end of the said shaft E opposite the fly-wheel is provided with a cam, M.

N represents a shuttle arm or lever, which is fulcrumed on the under side of the base-plate by means of a bolt or screw, O. The

said shuttle arm forms a lever of the first class, and from its shorter end depends a pair of vertical spindles, P, the lower ends of which are connected by a yoke, R.

S represents a pair of cylindrical sleeves, which are fitted on the spindles P and are adapted to turn freely thereon. The said sleeves are arranged on opposite sides of the periphery of the cam L, and are provided on their opposing sides with friction-plates T, which bear against opposite sides of the periphery of the cam.

V represents a curved shuttle-race made in the base-plate, and the radius of which is drawn from the center of the bolt or pin O, which forms the fulcrum of the shuttle-lever. The long arm of the latter is provided at its outer end with a carrier or head, W, adapted to receive the shuttle and guide the same back and forth in the shuttle-race when the shuttle-lever is vibrated.

On the upper side of the base-plate, near one end thereof, is formed the usual transverse guideway, X, for the slides Y, that cover the shuttle-race.

Z represents a plate, which extends transversely across the center of the shuttle-race. In that portion of the plate Z which is above the outer side of the shuttle-race is an opening, A', and at the ends of the said opening are transverse guideways B'.

C' represents a removable bridge plate or strip, which fits in the guideways B' and extends over the opening A'. On the outer side of the said strip or bridge-plate a transverse opening, D', is made in the plate Z, for the purpose to be hereinafter explained.

E' represents a needle-arm, which is pivoted to one side of the arm B, as shown, and the front end of the said needle-arm extends forward into the rear side of the vertical guide-box C and is pivoted to a vertically-movable needle-bar, F', which is guided in the guide-box.

G' represents the pivotal pin, which projects from the needle-bar and works in a slot, H', at the free end of the needle-arm. The upper end of the needle-bar F' is provided with a vertical oblique slot, I', through which the thread may be passed, and at the lower end of the said slot is a transverse opening, K'.

L' represents a guide, which is arranged on the upper side of the guide-box C, and in one side of the said guide L' is a vertical slit, through which the thread may be passed.

5 On the upper side of the arm B, near the center thereof, is arranged a vertical plate, M', which is provided on the front side with a circular recess, N'. From the center of this recess projects a pin or stud, O', on which is
10 journaled a circular disk, P', the periphery of which is provided with a deep groove adapted to receive the thread. On the upper side of the plate M' is a spring-arm, R', having an opening in its free end. A pin, T', projects
15 from one side of the plate M', and the shank of this pin extends through the said opening in the spring-arm. (See Figs. 2 and 3.)

From the rear side of the arm B projects the usual vertical spindle, U', adapted to receive
20 the spool of thread. At the inner end of the needle-arm E' is formed a U-shaped arm, V', the upper end of which is provided with a pair of outwardly-extending ears, W'.

X' represents an eccentric, which is secured
25 to the shaft E on the inner side of the pulley G.

Y' represents a pitman, which has its lower end connected to the eccentric X' by means of an eccentric-strap, Z'. The upper end of the
30 pitman Y' is bifurcated to form a pair of vertical ears, A'.

B² represents a block, which has its extremities reduced to form trunnions that fit in transverse openings made in the ears W'. From opposite sides of the said block B² project
35 trunnions C², which work in transverse openings D², made in the ears A'.

From the foregoing description it will be understood that when the shaft E is rotated in either direction the shuttle-lever will cause
40 the shuttles to move back and forth in the shuttle-race, and the needle arm E' will be vibrated or rocked in a vertical direction, and thereby cause the needle-bar F' to reciprocate vertically.

45 E² represents the usual spring-actuated presser-bar, which works in the guide-box or head C and has the lever F², by means of which the presser-bar may be raised or lowered. To the lower end of the said presser-
50 bar is detachably secured the usual presser-foot, G², which bears upon the under side of the bridge-plate C' when the machine is in operation.

H² represents a feed-bar, which is arranged
55 on the under side of the base-plate, near the front end thereof, and bears against the outer side of the adjacent bearing-box D. This feed-bar is guided longitudinally between depending ears I² and K², which extend from the lower
60 side of the base-plate. The front end of the feed-bar is provided with a longitudinal slot, L², the sides of which have longitudinal grooves which are V-shaped in cross section.

M² represents a block, which fits in the slot
65 L² and is adapted to move longitudinally therein. The said block M² is provided with a longitudinal central slot, N².

O² represents a transverse pin, which extends through and connects the ears K², and also extends through the slot N². 70

P² represents a screw, which works in an opening somewhat larger than the screw in the front end of the feed-bar and has its inner end swiveled to the front end of the block M². The function of this screw is to move the block
75 M² forward or rearward in the slot L² by means of the nut, which is adjustable thereon, and thereby regulate the length of the stitch made by the machine, as will be hereinafter described. 80

R² represents a curved pitman, which has its upper end pivoted to one side of the block M², near the front end thereof, and the rear end of the said pitman is connected to the cam M on the front end of the shaft V by means of a
85 wrist-pin, S². The lower side of the feed-bar bears upon the upper edge of the cam M.

T² represents a right-angular feed arm, which extends through and is adapted to work in a suitable transverse groove, B², with which the
90 base-plate of the machine is provided. The lower end of this feed arm is provided with a vertical slot, V².

W² represents a set-screw, which extends through the said slot and enters the feed-bar
95 H². The function of the said set-screw is to clamp the feed-arm to the feed-bar at any desired vertical adjustment on the latter. From the upper side of the horizontal portion of the feed-arm, at the inner end thereof, projects a
100 vertical feed-plate, X², which extends upward in the slot or opening D' and is provided with the feed teeth or serrations Y².

The operation of my invention is as follows: The thread from the spool on the spindle U' passes between the free end of the spring-arm
105 R' and the opposing side of the plate M', from thence around the periphery of the disk P', then extends forward through the guide L', through the opening I' in the upper end of the
110 finger-bar, thence downward through suitable guides, Z², on the front side of the guide-box, and is then passed through an opening at the lower end of the needle-bar, and is finally threaded in the eye of the needle. A shuttle
115 of the usual construction is placed in the head of the shuttle-lever and is operated thereby in the shuttle-race. When the main shaft is rotated, the needle-bar reciprocates vertically and the shuttle moves back and forth in the
120 shuttle-race, as before described. The cam M is so arranged on the front end of the shaft E that it will raise the feed-bar H² as the needle-bar ascends, and thereby the feed-plate carried
125 by the said feed-bar will move upward and its teeth become engaged by the fabric under the presser-foot as soon as the point of the needle is withdrawn from the fabric. As the main shaft continues to rotate, the pitman R², connecting the eccentric cam to the block held
130 rigidly in the feed-bar, causes the said feed-bar to move rearward while it is elevated by the cam and to move forward while it is lowered by the cam, and thus the necessary upward

and rearward and downward and forward motions are secured for the feed-plate, and consequently the latter feeds the fabric rearward a distance corresponding to the length of each 5 stitch at the instant succeeding that in which the stitch is made. By adjusting the block M^2 longitudinally in the slotted end of the feed-bar the length of the stitch may be regulated.

A sewing-machine thus constructed is extremely cheap and simple, contains very few 10 operating parts, runs very easily, and is almost noiseless.

Having thus described my invention, I claim—

15 1. The combination, in a sewing-machine feed mechanism, of the rotating cam M , the feed-bar H^2 , bearing on the said cam and carrying the feed-plate, the block M^2 , secured to the feed-bar and adjustable thereon, for the 20 purpose set forth, and the pitman R^2 , connecting the said block to the cam M , substantially as described.

2. The combination of the rotating cam M ,

the feed-bar H^2 , bearing thereon and carrying the feed-plate, said feed-bar having the longitudinal slot in one end, the slotted block secured in the slot in the feed-bar, means for adjusting the said block longitudinally, the guide-pin passing through the slot in the block, and the pitman R^2 , connecting the said block to 25 the cam, substantially as described. 30

3. The combination, in a sewing-machine feed mechanism, of the rotary cam M , the feed-bar H^2 , bearing on the said cam, the block M^2 , secured to the feed-bar and adjustable thereon, 35 for the purpose set forth, the pitman connecting the said block to the cam, and the feed-plate attached to the feed-bar and vertically adjustable thereon, substantially as described.

In testimony that I claim the foregoing as my 40 own I have hereto affixed my signature in presence of two witnesses.

RICHARD MANTON HATCHER.

Witnesses:

R. D. READ,
ALEX. DAVIDSON.